AMENDMENTS TO THE SPECIFICATION:

Please amend the title as follows:

--A LIGHT CONTROL APPARATUS HAVING A DEVICE FOR CONTROLLING THE INPUT SIGNAL LIGHT OF AN OPTICAL TRANSMISSION PATH--.

Please replace the paragraph beginning at page 3, line 10, with the following rewritten paragraph:

--FIG. 12 is a configuration example of a fiber-type optical fuse disclosed in JPA-11-281842. In this example, a medium 123 comprising a heat-sensitive and heat-metamorphic material and a light-pyrogenic material is provided between ~~in the middle of an~~ optical ~~fiber~~ fibers 121 in a chassis 122. The heat-sensitive and heat-metamorphic material layer has optical transparency and generates heat in accordance with the intensity of an input light 124. Thermal destruction occurs when the optical power exceeds a predetermined level to scatter or cut off a propagating light, thereby reducing a power of an output light 125. Optical fuse operation is thus realized.--

Please replace the paragraph beginning at page 9, line 14, with the following rewritten paragraph:

--FIG. 4 is a cross-sectional view of a semiconductor photovoltaic device or semiconductor photovoltaic device having a nipi-type multijunction structure. In the case of the nipi-type multijunction semiconductor photovoltaic device, a PIN junction that generates an output voltage is formed as a multi-layered section [[43]] in which a plurality of PIN junctions are formed

on a semiconductor substrate. As shown in FIG. 4, a semiconductor photovoltaic device to which an input light 47 is input includes an N-type cladding layer 42 formed on a semiconductor substrate 41, a light absorption layer 43 having an i-type (in the case of a semiconductor photovoltaic device) or nipi-type (in the case of a nipi-type multijunction semiconductor photovoltaic device) multijunction structure, a P-type cladding layer 44, a P-type electrode 45, and an N-type electrode 46.--

Please replace the paragraph beginning at page 18, line 4, with the following rewritten paragraph:

--In the present example, an input light 67 passing through an optical fiber 61 and entering the light control apparatus is split by a beam splitter 64 (signal light: monitor light = 9:1). The monitor light 62 enters a ~~semiconductor photovoltaic device or a~~ semiconductor photovoltaic device 65 ~~having~~ that may include a nipi-type multijunction structure. The signal light 63 passes through a micromachine (optical shutter) 66 and is output as an output light 68. The ~~semiconductor photovoltaic device or a~~ semiconductor photovoltaic device 65 ~~having a nipi-type multijunction structure~~ generates a signal voltage in accordance with the level of the monitor light 62 and directly supplies it to the micromachine (optical shutter) 66.--

Please replace the paragraph beginning at page 19, line 14, with the following rewritten paragraph:

--It is possible to easily change the input power which is caused the optical fuse operation by design. More

specifically, it is possible to control the input power by adjusting the split ratio of the beam splitter 64 or photoelectric conversion rate of the ~~semiconductor photovoltaic device or~~ semiconductor photovoltaic device 65 ~~having a nipi-type multijunction structure~~. In the case where a surge light of W-level is applied, the sprit ratio of the monitor light side can be made extremely small, thereby significantly reducing transmission loss in the light control apparatus.--

Please replace the paragraph beginning at page 19, line 24, with the following rewritten paragraph:

--Further, by connecting a 2V offset power source in series between the ~~semiconductor photovoltaic device or~~ semiconductor photovoltaic device 65 ~~having a nipi-type multijunction structure~~ and micromachine (optical shutter) 66, the optical fuse operation can be realized with a signal voltage corresponding to the monitor light of 0.5 mW. This allows the split ratio of the beam splitter 64 to be (signal light: monitor light = 9.5: 0.5). As a result, transmission loss in the light control apparatus could be reduced from 10% to 5%.--

Please replace the paragraph beginning at page 20, line 9, with the following rewritten paragraph:

--In the present example, an input light 77 passing through an optical fiber 71 and entering the light control apparatus is split by a beam splitter 74 (signal light: monitor light = 9:1).. The monitor light 72 enters ~~a semiconductor photovoltaic device or~~ a semiconductor photovoltaic device 75

~~having~~ that may include a nipi-type multijunction structure. The signal light 73 passes through an absorption-type semiconductor modulator 76 and is output as an output light 78. The ~~semiconductor photovoltaic device or a~~ semiconductor photovoltaic device 75 ~~having a nipi-type multijunction structure~~ generates a signal voltage in accordance with the level of the monitor light and directly supplies it to the absorption-type semiconductor modulator 76. When a high power input light enters, a signal voltage with a value more than that of the extinction voltage of the absorption-type semiconductor modulator 76 is applied to drive the absorption-type semiconductor modulator 76 to a closing state, thereby enabling optical fuse operation.--

Please replace the paragraph beginning at page 21, line 25, with the following rewritten paragraph:

--Further, also in the example, by connecting a 2V offset power source in series between the ~~semiconductor photovoltaic device or~~ semiconductor photovoltaic device 75 ~~having a nipi-type multijunction structure~~ and absorption-type semiconductor modulator 76, the optical fuse operation can be realized with the monitor light of 0.1 mW. This allows the split ratio of the beam splitter 74 to be (signal light: monitor light = 9.9: 0.1). As a result, transmission loss in the light control apparatus could be reduced from 10% to 1%.--

Please replace the paragraph beginning at page 22, line 11, with the following rewritten paragraph:

--In the present example, an input light 87 passing through an optical fiber 81 and entering the light control apparatus is split by a beam splitting waveguide 84 (signal light: monitor light = 9:1). The monitor light 82 enters a ~~semiconductor photovoltaic device or a~~ semiconductor photovoltaic device 85 ~~having~~ that may include a nipi-type multijunction structure mounted on a semiconductor Si substrate 89. The signal light 83 passes through a micromachine (optical shutter) 86 and is output as an output light 88. The ~~semiconductor photovoltaic device or a~~ semiconductor photovoltaic device 85 ~~having a nipi-type multijunction structure~~ generates a signal voltage in accordance with the level of the monitor light 82 and directly supplies it to the micromachine (optical shutter) 86 mounted on the Si substrate 89.--

Please replace the paragraph beginning at page 22, line 26, with the following rewritten paragraph:

--When a high power input light enters, a signal voltage to be converted in the ~~semiconductor photovoltaic device or~~ semiconductor photovoltaic device 85 ~~having a nipi-type multijunction structure~~, to which monitor light 82 is inputted, is increased. In this case, when a signal voltage with a value more than that of the drive voltage of the micromachine (optical shutter) 86 is applied, the optical shutter is driven to a closing state, thereby enabling optical fuse operation. In the Example, an electrostatic actuator-type micromachine having an operating voltage of 5 V is used as the micromachine (optical

shutter) 86. Accordingly, it is required to use the semiconductor photovoltaic device to provide an output voltage of 5 V. This requirement can be satisfied by using a semiconductor photovoltaic device having a nipi-type multifunction structure in which a voltage value corresponding to the number of multilayers of its PIN structure can be obtained.--

Please replace the paragraph beginning at page 23, line 27, with the following rewritten paragraph:

--It is possible to easily change the input power which is caused the optical fuse operation by design. More specifically, it is possible to control the input power by adjusting the split ratio of the beam splitting waveguide 84 or photoelectric conversion rate of the semiconductor photovoltaic device ~~or semiconductor photovoltaic device~~ 85 ~~having a nipi-type multijunction structure~~. In the case where a surge light of W-level is applied, the ~~sprit~~ <u>split</u> ratio of the monitor light side can be made extremely small, thereby significantly reducing transmission loss in the light control apparatus.--

Please replace the paragraph beginning at page 24, line 9, with the following rewritten paragraph:

--Further, also in the example, by connecting a 2V offset power source in series between the ~~semiconductor photovoltaic device or~~ semiconductor photovoltaic device 85 ~~having a nipi-type multijunction structure~~ and micromachine (optical shutter) 86, the optical fuse operation can be realized with a signal voltage corresponding to the monitor light of 0.5 mW. This

allows the split ratio of the beam splitting waveguide 84 to be (signal light: monitor light = 9.5: 0.5). As a result, transmission loss in the light control apparatus could be reduced from 10% to 5%. Further, in the example, components are mounted in an integrated manner on the planar optical circuit on the Si substrate, so that the volume of the light control apparatus is reduced to 1/2 in comparison to that of the light control apparatus of Example 1, realizing further size reduction.--

Please replace the paragraph beginning at page 24, line 29, with the following rewritten paragraph:

--In the present example, an input light 97 passing through an optical fiber 91 and entering the light control apparatus enters a ~~stack-type semiconductor photovoltaic device or a~~ stack-type semiconductor photovoltaic device 95 ~~having~~ <u>that may include</u> a nipi-type multijunction structure as an incident light 92. The incident light is then guided inside the ~~stack-type semiconductor photovoltaic device or a~~ stack-type semiconductor photovoltaic device 95 ~~having a nipi-type multijunction structure~~. A part of the incident light 92 is coupled (evanescently-coupled) to the photovoltaic region as shown in FIG. 5 to be absorbed by the photovoltaic region to thereby generate a voltage. The guided light that has not been coupled is output as an ~~outgoimg~~ <u>outgoing</u> light 93 from the output side. The outgoimg light 93 passes through a micromachine (optical shutter) 96 and is output as an output light 98.--

Please replace the paragraph beginning at page 25, line 15, with the following rewritten paragraph:

--The ~~stack-type semiconductor photovoltaic device or a~~ stack-type semiconductor photovoltaic device 95 ~~having a nipi-type multijunction structure~~ generates a signal voltage in accordance with the level of the absorbed light and directly supplies it to the micromachine (optical shutter) 96.--

Please replace the paragraph beginning at page 25, line 20, with the following rewritten paragraph:

--When a high power input light enters, a signal voltage to be converted in the ~~stack-type semiconductor photovoltaic device or a~~ stack-type semiconductor photovoltaic device 95 ~~having a nipi-type multijunction structure~~ is increased. In this case, when a signal voltage with a value more than that of the drive voltage of the micromachine (optical shutter) 96 is applied, the optical shutter is driven to a closing state, thereby enabling optical fuse operation.--

Please replace the paragraph beginning at page 26, line 23, with the following rewritten paragraph:

--It is possible to easily change the input power which is caused the optical fuse operation by design. More specifically, it is possible to control the input power by adjusting coupling (evanescent coupling) degree to the photovoltaic region in the ~~stack-type semiconductor photovoltaic device or a~~ stack-type semiconductor photovoltaic device 95 ~~having a nipi-type multijunction structure~~ to change the

photoelectric conversion rate. Further, by connecting a 2V offset power source in series between the stack-type semiconductor photovoltaic device 95 having a nipi-type multijunction structure and micromachine (optical shutter) 96, it is possible to reduce the light splitting ratio to the semiconductor photovoltaic region for optical fuse operation to 5%. As a result, transmission loss in the light control apparatus could be reduced from 10% to 5%.--

Please replace the paragraph beginning at page 27, line 19, with the following rewritten paragraph:

-- In the present example, an input light 107 passing through an optical fiber 101 and entering the light control apparatus enters a ~~stack-type semiconductor photovoltaic device or a~~ stack-type semiconductor photovoltaic device 105 ~~having~~ that may include a nipi-type multijunction structure mounted on a Si substrate 109 as an incident light 102. The incident light is then guided and a part of the incident light is coupled (evanescently-coupled) to the photovoltaic region as shown in FIG. 5 to be absorbed by the photovoltaic region to thereby generate a photoelectric conversion voltage. The guided light that has not been coupled is output as an outgoing light 103 from the output side. The outgoing light 103 passes through a micromachine (optical shutter) 106 and is output as an output light 108. The ~~stack-type semiconductor photovoltaic device or a~~ stack-type semiconductor photovoltaic device 105 ~~having a nipi-type multijunction structure~~ generates a signal voltage in

accordance with the level of the absorbed light and directly supplies it to the micromachine (optical shutter) 106 mounted on the Si substrate 109.--

Please replace the paragraph beginning at page 28, line 9, with the following rewritten paragraph:

--When a high power input light enters, a signal voltage to be converted in the ~~stack-type semiconductor photovoltaic device or a~~ stack-type semiconductor photovoltaic device 105 ~~having a nipi-type multijunction structure~~ is increased. In this case, when a signal voltage with a value more than that of the drive voltage of the micromachine (optical shutter) 106 is applied, the optical shutter is driven to a closing state, thereby enabling optical fuse operation. In the example, a stack-type semiconductor photovoltaic device which a splitting ratio to the photovoltaic region is 10% is used, and an electrostatic actuator-type micromachine having a drive voltage of 5 V is used as the micromachine (optical shutter) 106. Accordingly, it is required to use the stack-type semiconductor photovoltaic device to provide an output voltage of 5 V.--

Please replace the paragraph beginning at page 29, line 8, with the following rewritten paragraph:

--When an input light of 10 mW was input in this configuration, 1 mW is split to the photovoltaic region to generate a voltage of 5 V, thereby driving the micromachine (optical shutter) 106 to enable optical fuse operation. It is possible to easily change the input power which is caused the

optical fuse operation by design. More specifically, it is possible to control the input power by adjusting coupling (evanescent coupling) degree to the photovoltaic region in the ~~stack-type semiconductor photovoltaic device or a~~ stack-type semiconductor photovoltaic device 105 ~~having a nipi-type multijunction structure~~ to change the photoelectric conversion rate.--